

1.2 SPACE MISSIONS

A TEST OF THE ASTROMETRIC QUALITY OF THE SOUTHERN GUIDE STAR CATALOG 1.2

B. Bucciarelli (OATo, Italy),

C. R. Sturch, B. M. Lasker, M. G. Lattanzi (STScI, USA),

T. M. Girard, I. Platais, W. F. Van Altena (Yale University)

We used preliminary positions of the Yale Southern Proper Motion (SPM) catalogue (Platais, Girard et al., *Astronomy from Large Database II*, eds. Heck & Murtag, 1992) in a region of 5 fields around the South Galactic Pole to assess the astrometric accuracy of the mask solution (Taff, Lattanzi and Bucciarelli, *ApJ* **361**, 667, 1990), which will be used (in combination with the subplate method) for the construction of the Guide Star Catalogue (GSC) version 1.2. Another semi-external check is done by direct comparison of GSC positions of stars lying onto overlapping plate areas. Results in tables 1 and 2 show that the average rms of the GSC–SPM differences is quite satisfactory (~ 0.33 *arcsec per coordinate*), while an error degradation (up to ~ 1 *arcsec positional*) can occur within a limited area at the plate corners, its signature varying from plate to plate. This can be cured on a plate-by-plate basis by the use of a filtering technique, e.g., as provided by the Collocation method (Bucciarelli, Lattanzi and Taff, *ApJ Suppl.* **84**, 91, 1993), wherever a suitable reference star density is available.

Table 1: GSC–SPM *rms* for the 5 fields

	S409	S349	S410	S471	S472
No. of stars	1342	934	1219	989	1237
$\sigma_{\Delta\alpha\cos\delta}$	0."30	0."44	0."30	0."34	0."32
$\sigma_{\Delta\delta}$	0."29	0."35	0."35	0."33	0."22

Table 2: GSC–GSC *rms* between **S409** and the four contiguous overlapping plates

	S409/S349	S409/S410	S409/S471	S409/S472
No. of stars	1106	1023	3119	1128
$\sigma_{\Delta\alpha\cos\delta}$	0."23	0."36	0."24	0."20
$\sigma_{\Delta\delta}$	0."28	0."26	0."28	0."39